THE VETERINARY RECORD

FOUNDED BY WILLIAM HUNTING, F.R.C.V.S., 1888.

No. 4. JANUARY 23, 1943 VOL. 55

Chronic Bovine Mastitis

An Attempt to Discover the Relationship between Clinical Symptoms and Infection with Streptococcus agalactiae.

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Since *Str. agalactiae* was first discovered much useful information has accumulated concerning this organism. We recognise it as very commonly associated with chronic bovine mastitis, and we have a good knowledge of its cultural characteristics. It is still uncertain, however, what conditions are necessary for the occurrence of a new infection in the field.

From recent Australian reports[1] it appears probable that a new infection need not necessarily arise from a previous case of mastitis, and it has also been found that *Str. agalactiae* can survive for months outside the animal body[2]. Sources and chances of infection would seem to be present under many varied conditions, but even under favourable ones it is exceedingly difficult to infect a healthy uninjured quarter. According to Bendixen[3] and others some kind of injury is a necessary precedent.

This last finding especially appeals to the clinician. From the fundamental principles of pathology demonstrated in his everyday experience, he realises that specific infection is often a common sequel to general inflammation and it does not seem logical that the mammary gland should be exceptional in this respect. It is desirable that the importance of local inflammation in bringing about infection with *Str. agalactiae*, or the multiplication of a minimal, previously unrecognised infection, should be correctly assessed and further information gained on the relationship between clinical inflammation and *Str. agalactiae* infection. Observations to this end have been made by the writer over a period of four and a half months.

The work was carried out in a herd with an average of 35 Ayrshire cows and heifers in the dairy byre. About 65 per cent. of the animals were infected with *Str. agalactiae* in one or more quarters. Segregation of negative animals in one part of the byre had been practised for two years immediately prior to the investigation but there was no reduction in the percentage of positives, and it remained very doubtful whether there had been any clinical improvement.

The clear portion of the herd was tested by Dr. P. S. Watts on July 9th and 23rd, 1941, and at weekly intervals throughout the whole period of investigation. His method is described below.

Quarter samples of fore milk were taken into sterile tubes containing sufficient solution of sodium azide to give a final azide concentration of 1 in 20,000. They were allowed to remain overnight at room temperature. 0·01 c.c. of the cream from each tube was then put in separate plates, deep (pour) plates made with Edwards' crystal violet aesculin blood agar, and the plates incubated for 48 hours at 38° C. Any suspicious colonies were picked and examined by biochemical tests and by Lancefield's precipitin technique. In any sample the presence of even a single colony was recorded as positive. From the results of these July tests it was possible to select certain negative cattle and quarters for observation: subsequently several heifers were included when they joined the herd at first calving.

Clinical observations were started on August 1st, 1941, and carried out twice every day: within half an hour after the morning milking and immediately before the commencement of the evening milking. Every week quarter samples were taken and sent to the Hannah Dairy Research Institute where they were examined as above. In addition, wherever suspicion of infection in any quarter occurred at a clinical herd inspection, a sample from this quarter was immediately sent to the institute for testing.

DESCRIPTION OF CLINICAL CHANGES RECORDED

In the bovine udder various changes may occur, some physiological, others definitely abnormal and pathological. Only those were recorded which, in the writer's opinion, were in the latter class. Frequently one quarter was markedly different from the others, which made a decision easy.

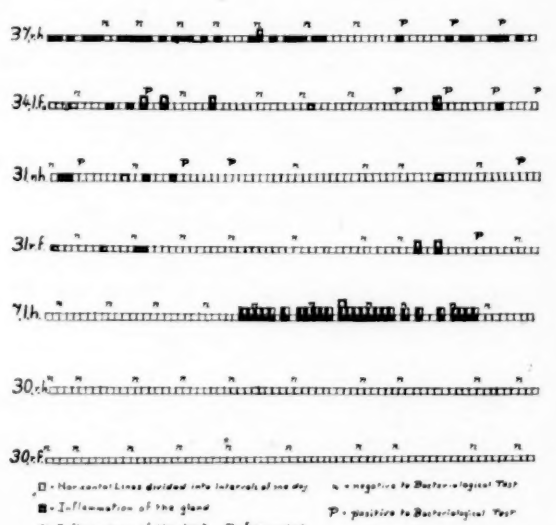
Sores on Teats.—Sores on teats were noted only when there was present a wound of some depth, where there was marked inflammation or where the sore involved the teat canal. From time to time slight superficial scratches were observed, but these were trivial, healed practically by first intention and were disregarded.

Inflammation of the Gland.—This was indicated by one or other of the classical signs of inflammation; abnormal secretion was also included under this heading.

Inflammation of the Teat was often noticeable immediately after milking, and in many instances was difficult to detect a few hours later. The wall of the teat was often congested and moulded into the shape of the teat cup, and it was quite evident that the condition was brought about by the grip of the milking machine.

In quite a number of cases this inflammation tended to be permanent. Thickening and inflammation developed throughout the whole lining of the teat canal and a ring of inflammatory fibrosis frequently appeared round the proximal end of the teat. Where the sphincter was involved the flow of milk was more or less retarded, making it difficult to milk out the quarter.

All the changes in each quarter were recorded by the writer in graphical form, but as these are too voluminous for publication, a few representative records are shown below. These may convey to the reader an impression of the clinical changes which may be encountered from day to day in the lactating bovine udder.



CONCLUSIONS

The complete records may be taken to include the major clinical and bacteriological changes, which occurred during the investigation, and are considered on this basis, but it must be borne in mind that imperceptible inflammatory changes occur in the udder and also that the laboratory technique employed might not have revealed every slight infection with *Str. agalactiae*.

It was noticeable that infected quarters may show either a transient infection or one of more permanent nature with repeated positive bacteriological results. This permanent infection occurred in seven quarters and in these the preceding clinical changes were made up of inflammation of the teat (caused by the milking machine) in four cases, sore teat in one, and inflammation of the gland associated with a change of milking machine in the other two cases.

In the following table the clinical history of these cases prior to the demonstration of infection is compared with that of all the other quarters, and though it is not possible owing to the small number of permanently infected quarters to draw any definite conclusions it is noticeable that the average percentage of inflammation is much smaller in the non-infected quarters.

Quarters	Percentage of observations showing clinical inflammation prior to the first positive bacteriological test, or, in the case of negative quarters the percentage during the whole experiment
Permanently infected (7)	20
Non-infected quarters and those with transient infection (58) ...	5·5

This inflammation apparently precedes infection by *Str. agalactiae* or in any case precedes any infection demonstrable by the bacteriological technique used.

Another result of the investigation has been a demonstration of the slowly progressive changes in the bovine udder brought about by repeated slight injuries. These changes are included under "inflammation of the teat" and must be carefully considered in connection with the clinical diagnosis and control of bovine mastitis.

Summary

1. Sixty-five quarters originally negative to a bacteriological test for mastitis were examined clinically twice a day for 143 days. They were also examined bacteriologically at approximately weekly intervals.

2. In the quarters which became permanently affected with mastitis (seven) clinical changes were observed at 20 per cent. of the clinical examinations carried out prior to the first indication of bacterial infection.

3. In those quarters which were negative or showed merely transient infections (58) only 5·5 per cent. of the examinations showed any clinical abnormality.

4. It is suggested that these results, though few, tend to show that clinical injury precedes infection with *Str. agalactiae*.

Acknowledgments.—Grateful acknowledgments are due to the owners of the herd who showed a keen interest in the work and afforded every facility for carrying out the observations, and to Dr. P. S. Watts and his staff at the Hannah Dairy Research Institute who carried out the large number of bacteriological tests for me.

References

[1]Bull, L. B., Murnane, D., Munch Peterson, E., MacLean, J. P., and Clark, S. E. R. (1940.) *Bull. Coun. sci. & ind. Res. Aust.* No. 134.

[2]Bryan, C. S. *Vet. Med.* **29.** 384 and 524.

[3]Bendixen, H. C. (1934.) *Medlemsbl. danske Dyrlaegeforen.* **17.** 480, 495, 527. Abstract in *Vet. Bull.* **5.** 537.

RATIONS FOR STALLIONS OF HEAVY BREEDS

Travelling stallions of the heavy breeds will be allowed "Horse-feed" coupons this year at the rate of 5 cwt. per month for Shires and 4 cwt. per month for Suffolks, Percherons and Clydesdales from January to June, or July in exceptional cases. Coupons will not, however, be allowed until the travelling season begins unless the owner has insufficient oats of his own growing to provide rations at the above rates. Owners should apply, giving particulars of their requirements, to their local Agricultural Executive Committee. Coupons will be available for deposit with any dealer. Any owner preferring to buy straights instead of horsefeed may be issued with ordinary cereal and protein coupons in the proportions he desires up to a maximum of 25 per cent. of protein.

Stallions standing at stud may receive similar allowances if the owner has insufficient oats for their needs. Where there is a sufficiency of oats but bran is required as part of the rations, coupons endorsed "bran only" will be allowed up to 25 per cent. of total requirements on proof of sale of an equivalent quantity of oats.

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THE HIGHLAND SOCIETY

At the recently held annual meeting of the above Society it was reported that the membership stands at 8,553, and that it is in a prosperous financial state. During the year £186 was spent on educational work; £316 on work in the chemical and veterinary departments; £1,250 on the Society's "Transactions," and £459 for grants to local societies. Special grants were made, including £200 to the Animal Diseases Research Association; £100 to Glasgow Veterinary College; £100 to the Scottish Agricultural Organisation Society, and £128 to the Scottish Red Cross Agriculture Fund.

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The question of forming a Percheron Horse Society or of linking up with Hunts Shire Horse Society was discussed at a meeting in Huntingdon. It was decided to ask the Shire Society to approach the Ministry for permission to change its name from "Shire" to "Heavy," to enable it to travel any breed of stallion.

Veterinary Science and its part in Agricultural Prosperity*

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I have chosen to speak to this Society on veterinary science because it is apparent to those of us who are concerned with the welfare of agriculture and who know of the potentialities of this science that full and proper use is not being made of it in this country, and consequently that much preventable wastage arising from disease in livestock is taking place. And, since it is largely through the agency of graduates in your Faculty that the farming community is enlightened on the value of applied science, it is not inappropriate that your members should be in possession of the relevant facts concerning the academic status and the practical nature of this branch of it.

Veterinary medicine, while having its origin in crude and instinctive methods of treating animal ailments in ancient and medieval times, did not reach the status of a science until veterinary schools were opened in Europe towards the end of the eighteenth century, by which time it should be remembered the subjects that then comprised the sciences of human medicine and agriculture had been well advanced. I wish to stress this relatively recent origin of veterinary science because that fact is to a considerable extent responsible for the lack of understanding that prevails regarding its present scientific standing. To many people the veterinary surgeon of to-day is but a modernised version of the farrier and the cow doctor of the past. It is not generally realised that he is as different from those antecedents of his as the present-day medical doctor is from his predecessors, the bone-setter, the blood-letter and the other denominations of quacks who practised human medicine in the middle ages, or as the graduate in agricultural science is from the farmer whose education ceased at the National School. This lack of appreciation of modern veterinary science on the part of the public is responsible, amongst other things, for the large number of veterinary quacks that are present in this country; people who through their ignorance of the causes and nature of disease are incapable of applying suitable treatment to the many infectious and other forms of destructive complaints that are harassing the health of our livestock. The activities of these people and certain vendors of bogus cures for animal complaints are menaces which must be supplanted by men with scientific training if the considerable losses from animal diseases are to be overcome.

The chief reason why these people exist in such numbers here as compared with other countries is that this country has been one of the last in Europe to establish veterinary education whereby to provide sufficient scientists to replace them. Whilst the first British veterinary school was opened as early as 1791, and the second in 1823, the third in 1862 and the fourth in 1873, the first and only veterinary school in this country, that here in Dublin, was not established until the year 1900, 42 years ago. It is true that the health of the country's livestock was not entirely in the hands of quacks up to that time for a small number of veterinary graduates from the British schools had been in practice here for some years previously. Nevertheless, the influence of those few men was necessarily limited and quackery held the field almost uncontested until graduates from our own school became available in 1904 and onwards. On account of the small numbers who went in for veterinary science here after the opening of the College and for some years afterwards even this local supply of veterinary surgeons was insufficient to bring about much change in the existing conditions. It was not until quite recently that the number of veterinary surgeons here has been sufficient to cause any material restriction in the activities of quacks, who still manage to function widely in the country.

It is difficult to understand why veterinary education was so long delayed in this, of all countries, but it appears that the Government of the country at that time was not aware of the importance of this new science which had been developed in France, Germany, Britain and other parts of Europe and in America in the eighteenth century and were it not for the Royal Dublin Society it is likely that the matter would have been delayed still further. In the year 1800, some 40 years after the opening of the first veterinary school in Europe and nine years after the first British school had been instituted, the attention of the Society was called to the progress that other countries, especially France, were making in veterinary science and steps were taken by it without delay to provide a centre for veterinary education here. The Society was empowered by Act of Parliament in that year to acquire ground for a veterinary institute and some houses in Townsend Street, Dublin, were taken for the purpose. Acting on the recommendation of the Principal of the London Veterinary College a professor and an assistant professor in veterinary science, together with a botanist, were appointed to deliver lectures. The scope of those lectures was wide and embraced rural economy as well as animal care and management and other subjects of a

* A lecture given before the Agricultural Science Society, University College, Dublin, March 10th, 1942.

purely veterinary nature. A museum was also procured from England for the use of the lecturers. This encouraging start met with an early setback, however, for in 1807, owing to financial stringency, the project had to be abandoned, though some independent lectures continued to be given by the professor up to the time of his death in 1825. Six years later, in 1831, the Society again endeavoured to carry through its original purpose, but again without success, and by 1886 the position seemed so hopeless that the Society dispensed with the museum, which was transferred on loan to the Albert College, Glasnevin. In 1866, however, another attempt was made and an influential committee was appointed by the Society to consider the matter afresh. This committee drew up an exhaustive and business-like report. Even a college curriculum was formulated and a detailed estimate of expenses was furnished. Again sufficient funds could not be provided to proceed with the project. The next move was not made till 1883, when a further committee of the Society drew up somewhat similar recommendations to the previous one. The report of this committee was also adopted by the Society, and though nothing further was done at the time, the report formed the basis of the final step that was taken ten years later, In 1894 the project was again revived and to get over the financial difficulty a guarantee fund was raised by private subscription and a Parliamentary grant of £15,000. On the strength of this fund a Charter of Incorporation was applied for and was granted and enrolled in 1896. Under this charter the governing body of the College consisted of twelve persons nominated by the Crown, twelve by the Royal Dublin Society, four by the Commissioners of National Education and four by private subscribers. In 1906 this charter was annulled and a new charter issued increasing the Society's nominees to 15, and giving to the Department of Agriculture and Technical Instruction. which had been created since the first charter was issued, the power to nominate 13 persons. The power of the Crown to nominate twelve persons was retained, but the Commissioners of National Education ceased to have power of nomination. In 1913 the Board of Governors decided to surrender their charter and to transfer the government of the College to the Department of Agriculture, under whose control it has since remained.

I have given you this detailed account of those protracted negotiations in order that you may see that were it not for the persistent interest and efforts of the Royal Dublin Society it is probable that veterinary education in this country would have been neglected entirely or delayed very considerably. For its action in this, as in so many other enterprises, the country owes much to that Society.

Since the institution of our Irish College, the number of graduates that has left its portals up to the present year total 529, but only a portion of these have remained in the country. Approximately 40 per cent. have gone abroad to practise their profession. This depletion has been chiefly responsible for the relatively small number of veterinary surgeons that have been in the country up to the present time. In the past five or six years, however, the number of students entering College has greatly increased. There are 300 students in College at present and as these graduate the numerical strength of the profession should be enhanced considerably here. The present strength of the veterinary profession in the 26 counties only amounts to 363, which represents a distribution of one veterinary surgeon to every 25,000 animals, excluding poultry. But since only 252 of these are engaged in private practice the number available for ordinary attendance on animals is one to 34,000. There is little doubt that the higher emoluments for veterinary services that obtain in other countries are the principal cause of the depletion here, but there is another cause and that is the higher appreciation of veterinary science abroad as compared with this country.

It may interest you to know how those 363 veterinary surgeons of ours are occupied in this country; 252 are engaged in general veterinary practice throughout the country, of whom 140 also undertake for Local Authorities, on a part-time basis, various veterinary public duties such as the examination of meat and milk for human consumption and the inspection of dairies and cowsheds. Some of them also inspect animals for the Local Authorities, at fairs and elsewhere. for evidence of certain scheduled infectious diseases which the Government is desirous of controlling under the Diseases of Animals Act. Forty-five are employed by the Department of Agriculture on a whole-time basis to control and eradicate some of the major infectious diseases and to prevent the introduction of certain other diseases into the country. They also inspect animals that are exported from the country and carry out other duties aimed at maintaining a reasonable state of health among the livestock. Thirty-seven others are employed by the Department for meat inspection purposes. Twelve are employed by the Corporations of Dublin, Cork and Limerick principally for public health duties and two by the Department of Public Health and Local Government. Two are engaged in research and 13 in teaching at the Veterinary College.

Let us now examine the nature of veterinary education and see what further provisions are desirable in connection with it. Before candidates can enter the Veterinary College they must possess a University Matriculation or higher certificate in general education. The Collegiate course of study occupies five years and each sessional year covers 30 weeks. In the first year the subjects taken are botany, zoology, chemistry and physics, with some lectures in animal husbandry. In the second year the subjects are junior anatomy, physiology, biochemistry, histology and further lectures in animal husbandry. In the third year the animal husbandry course is completed with a special study of dietetics, hygiene and genetics, and in this year also the subjects of senior anatomy, pharmacology, materia medica and toxicology are taken. In the fourth year preliminary lectures are taken in veterinary medicine and surgery and a full course in pathology, bacteriology, helminthology, entomology and protozoology. In the fifth and final year theoretical and clinical medicine, surgery and obstetrics, together with jurisprudence and veterinary public health, including a practical course in meat inspection, complete the curriculum. In addition to this intra-mural study each undergraduate has to spend a minimum pupilage of six months with a veterinary practitioner in the country in order to gain experience of veterinary problems under field conditions. Professional examinations are conducted twice each year by Examiners appointed by the Royal College of Veterinary Surgeons. These examiners are selected from a panel of medical and veterinary specialists in Great Britain and Ireland. Term examinations are also held by the teachers for College prizes. The standard of knowledge possessed by veterinary students in subjects of mutual concern is approximately the same as that of students in the medical faculty in the University. This standard has been especially aimed at by the Royal College Council, and it is with that purpose in view that medical examiners are put on the panel of examiners. These medical men, of course, only examine in subjects that are common to both professions, but these, as it happens, form the bulk of the veterinary course.

That the standard is well maintained at the medical level is vouched for by statements made by the medical examiners and by other evidence. I have heard these examiners say more than once in fact that the standard in some subjects is as high on the average as that in the medical faculty. There are certain subjects in the medical curriculum, however, which are much more intensively taught than in the veterinary one and there are some special subjects not taken by veterinary students. On the other hand, the veterinary student has special problems peculiar to his course, as may be imagined from the multiplicity of the animals he has to deal with, and the objective, rather than the subjective, nature of their diseases. The veterinary student also does a much more comprehensive course on preventive medicine than does his medical confrère, and the extensive study of animal husbandry, dietetics and genetics is an additional tax not borne by the medical student. On the whole the lot of the veterinary student is not an enviable one and he well deserves his diploma when he gets it.

While there is this close similarity in the volume of knowledge and academic status between graduates in human medicine and veterinary science, the facilities for post-graduate study are far greater in the realm of human medicine, with the result that specialisation, which is a very natural development following the considerable increase in information made available by research in recent years, has become an almost necessary acquisition for the successful medical man, whereas the veterinary graduate is somewhat handicapped in this important and very desirable development.

At the present time there are three post-graduate diplomas granted by the Royal College of Veterinary Surgeons, the governing body of veterinary education in these islands, namely, the Diploma in Veterinary State Medicine, which is comparable to the medical Diploma in Public Health and which is suitable for veterinary officers engaged on public health duties, the Fellowship of the Royal College of Veterinary Surgeons which is granted under somewhat similar conditions to those governing the Fellowship of the Royal Colleges of Surgeons and Physicians, and the Diploma in Tropical Veterinary Medicine, which compares well with the Medical Diploma in Tropical Medicine and which is only suitable for men who go to practise in tropical countries. In Great Britain facilities are also available for veterinary students to take University degrees in science. One of the schools there, that in Liverpool, is a Veterinary Science Faculty of the University, and the students take their science degrees concurrently with the M.R.C.V.S. diploma, which is a considerable asset. Two of the other schools, those in London and Edinburgh, have an extern science-degree affiliation with the University, which allows of science degrees to be taken practically simultaneously with the M.R.C.V.S. course. University degrees in science are available for veterinary students in practically all countries except their own, and in most countries veterinary education is controlled by the Universities. In the U.S.A., for example, out of the 44 veterinary schools that have been established there the majority are, or were, controlled by the Universities and State Colleges. The lack of provision for University degrees in veterinary science in this country tends to damp the enthusiasm for specialisation and this defect is keenly felt by our graduates who have to compete for appointments against men with these degrees. It may be asked what is the urgency or benefit of specialisation in veterinary practice? The answer is a simple one. The complaints of animals are no less intricate and difficult to cope with than are those of plants or human beings, and to deal successfully with some of them specialised knowledge and training are necessary. The results of specialisation in all spheres of applied science have fully justified the expense and trouble involved, and veterinary science is no exception in this respect. There is another branch of veterinary education, from the point of view of specialisation, that could be improved here with advantage to the community and that is research. I have already spoken on the importance of this matter in another place and shall not, therefore, go into it here.

Let us now turn to the application of veterinary science and see in what way it has contributed to the prosperity of agriculture in this and other countries and how it might be developed to exert further improvement in this regard here. There are two main

functions of veterinary science. One is to help in protecting the human community against diseases that arise from animal sources. This public health side, which is by no means inconsiderable and which is growing in importance as our knowledge and facilities develop, is outside our consideration. The other function is to protect the health of livestock and so reduce the cost of their upkeep and enhance their value and that of their produce. Nature has provided this country, better than most, with conditions of climate and soil that have helped, with other influences, to make the production of high-class animals our principal industry and given us an international reputation for livestock second to none. Those other influences were dealt with by Mr. Lynch at your inaugural meeting a few months ago and are familiar to many of you in any case. They include the various Government breeding-improvement schemes, the collective efforts of livestock societies and the individual enterprise of owners, in addition to the spade work put in by your graduates and other specialists in agricultural pursuits. This widespread effort has, as you are aware, added considerable value to the industry, and while there is still some room for improvement in the direction of genetics, husbandry and dietetics, there is one side of the industry which requires greater attention than it has received in the past, and that is economy in production, especially as regards disease control. One of the causes of delinquency in this matter has been the apathy of farmers, who, in many cases, have become so inured to animal diseases in their herds that they treat them as necessary evils regardless of their cost. Livestock societies, too, do not appear to pay sufficient attention to it, no doubt because they are concerned principally with improvement in breeding and production schemes. Yet, if the economy of farming be analysed it is apparent that animal disease is the principal factor responsible for reduction in profits on farms where the proceeds from livestock and their produce form the principal sources of income. Let me quote some figures to substantiate this: Mr. Murphy, of the University College, Cork, in a paper read before the Statistical Society in 1939 on an enquiry into costs and income on 98 farms involving a total of 7,244 acres and 2,137 head of cattle, stated amongst other things, that during the year May, 1937, to May, 1938, 1,602 calves were born on those farms and of these 515 died, which represented a mortality of 32 per cent. "This mortality," states Mr. Murphy, "represents a serious leakage in production and had a corresponding adverse effect on the financial returns. Had all the calves lived, and had they all been sold at the same price as the other calves, the income on all the farms would have been increased by approximately £2,731. The hidden cost arising from this rate of calf mortality was almost equal to the average cost, per gallon of milk, of rents and rates combined, and was one and a half times as great as the cost of herd replacements, or of repairs and depreciation." These striking figures, it should be remembered, refer only to calf mortality. No mention is made of losses from sickness or mortality in other animals on those farms. In this regard, however, let me quote an assessment of direct losses caused by infectious and certain other diseases in all farm animals in the 26 counties, arrived at by a special committee of the Veterinary Medical Association in 1936. Direct losses caused by such diseases in horses amounted to £2,000,000; in cattle to £4,000,000; in sheep to £490,000; in pigs to £150,000 and in poultry to £400,000, making a total of £7,040,000. The committee pointed out that this figure represented 16½ per cent. of the total value of all livestock in the country at the time. At about the same time as his assessment was made in this country, approximately the same figure, on a *per capita* basis, had been arrived at in Great Britain. In both countries the disease position was approximately the same at the time. A few years previous to that a Committee of the Economic Advisory Council in Britain also reported on the significance of disease as a cause of disturbance in the economy of dairy farming. Among 2,830 herds comprising 78 905 cattle observed by them, they found that disease, including deaths from diseases of various kinds, was responsible for 58·2 per cent. of the total eliminations from the herds and that trade, low milk yield, accidents and old age combined, accounted for the remaining 41·8 per cent. A computation of this kind has not, so far as I know, been made in this country, but it may be assumed that the position is not very dissimilar here. These computations speak for themselves and clearly indicate a serious interference with agricultural prosperity caused by animal diseases, and make it quite obvious that some energetic action requires to be taken in the matter and without delay. Present facilities are obviously insufficient, so that some new system of procedure applied on a wider scale requires to be put into operation. I have heard it said, however, that disease in animals helps to keep the number of livestock in the country at a convenient level. I do not profess to know what number of animals is most advantageous for the country, but if the number has to be restricted, this should be done by curtailed breeding and culling and not by the process of sickness, which involves so much financial loss on the upkeep and treatment of sick animals and the hidden costs that follow on the continuance of disease in the herds. The aim surely should be to rid our animals of the most destructive complaints at least and thus to improve the economy of livestock farming, whether this be conducted on a small or on a large scale.

To bring about this desirable state of affairs veterinary science must be applied more widely and more systematically under State control or otherwise. The Government, through the medium of the Diseases of Animals Act, has already succeeded in eradicating certain infectious diseases of animals, namely, lung plague or pleuro-pneumonia of cattle, foot-and-mouth disease, glanders and epizoötic lymphangitis of horses, rabies of dogs and swine fever. This is a creditable achievement in the short time this Act has been in force—the Act was introduced in these Islands in 1894—and with the facilities that have been available in this country in the way of veterinary personnel, but similar success cannot be claimed in the case of the other diseases that come within its provisions. Tuberculosis and contagious abortion are as widespread now as when they were brought within the Act in 1914 and 1925 respectively. Sheep scab and warble fly disease, which also came within its jurisdiction in 1900 and 1936 respectively, still persist. There are a number of other diseases which do not come within the Act that are causing even greater harm economically than the scheduled diseases and against which there is no concerted plan of control or treatment. In other countries State veterinary services, acting on a large scale, have brought about noteworthy improvement in the health of livestock. In the U.S.A., for example, the scourge of tuberculosis, against which we have made such little progress, has been eradicated from the 90,000,000 head of cattle in that vast territory in the course of 25 years, and headway is now being made there by a similar State-supported service against contagious abortion which continues to be our chief cattle scourge. The veterinary personnel employed by the Bureau of Animal Health in the U.S.A., which undertakes disease control, amounts to 2,000. In Canada similar large-scale State machinery is engaged in eradicating tuberculosis and contagious abortion along the lines adopted in the U.S.A. In both countries a number of other major diseases have already been exterminated. In South Africa practically all veterinary graduates are engaged by Government in a State Veterinary Service and the work carried out there during the past 40 years is one of the finest accomplishments of veterinary science. That country had been so highly infected by animal diseases of various kinds after the Boer War that livestock farming had been a hazardous undertaking at the time and for some years afterwards. To-day South Africa is one of the most progressive of livestock countries, thanks to the outstanding work of Sir Arnold Theiler, a noted Swiss veterinary surgeon, and his colleagues, who were commissioned by the Government after the war to suppress and eradicate the worst of those scourges. Throughout the British Colonies similar State-controlled veterinary services have been following the South African example and their progress has been no less striking. It is my firm conviction from experience gained in two of those Colonies that the success achieved there has resulted chiefly from the wide powers vested in the Veterinary Authorities and the adequate financial aid that was contributed by stock-owners and Government alike. In those countries the Department of Veterinary Science is a free and independent unit of the Government services directing its energies towards disease control and the improvement of animal husbandry unhampered by other affairs of State. At one time this service formed part of the Department of Agriculture in those Colonies, but it was decided to separate it from that association in recent years and the results appear to have fully justified the change. Recently a movement to expand State veterinary service has also been introduced in Great Britain. The immediate purpose of the British enterprise is to reduce the incidence of the diseases in dairy cattle at first and particularly contagious abortion, sterility, mastitis and a disease called paratuberculosis, which does not occur in this country. Just prior to the present war a special grant of £600,000 was approved by the British Parliament for the purpose of disease eradication on an extended scale, but that original project had to be suspended on account of the war and an alternative war-time measure has since been drawn up. This new measure has received the approval of the National Farmers' Union, whose representatives were consulted at the outset regarding its provisions, and representatives of the veterinary profession. Its main provisions, so far as we know them, are that a panel of veterinary practitioners is to be formed to undertake the treatment of the diseases specified and to advise farmers, who are to take part in the scheme, on the general care of their animals. The Government is to provide laboratory services free, including the issue of certain drugs and biological products that shall be required. The cost of the service otherwise to be borne by the farmers participating in it. The

scheme is, for the time being, to be conducted on a voluntary basis, but it has been said that it may be enforced by Statute at a later date should it prove advantageous to do so and if the circumstances justify this action. Whether this scheme or a modification of it is suitable or desirable for this country will depend on the evidence forthcoming from farmers, veterinary surgeons and others, if and when it is placed before them. If this scheme should prove successful in Britain and they succeed in suppressing some of those and perhaps other diseases at a later period, it is very likely that restrictions will be placed on our animals entering there unless we also take steps along the same lines now.

Before any scheme of disease eradication can be introduced here with a reasonable anticipation of success, it will be necessary in the first place, I think, to enlighten farmers on the nature and general harmful effects of the infectious diseases that are occurring among their animals and the futility of trying to cope with these except by methods that are based on scientific principles and applied on a large scale. This educational prerequisite would require to be applied widely and intensively by lectures, press articles, radio talks and by individual contacts such as could suitably be made by members of our profession who are in constant touch with the farming community. Not until our farmers realise the advantages that are to be derived from the production and maintenance of healthy herds can we expect willing and helpful co-operation from them in any scheme that may be introduced here. It will not be an easy matter in any case to convince some of them of the necessity for this change, but I am satisfied from contacts that I have made with groups of them up and down the country during the past few years that there is a considerable number anxious to have something done in the matter. As an index of their interest in the subject it seems significant that at three of the six centres at which I have lectured to them on disease control and prevention during the past year they have asked for a repetition of the lectures, and I have been told by those who organised these lectures at the various centres that the demand for them generally is very keen. From this and other evidence coming to our notice it would appear that a system of disease-eradication, provided it would not entail unreasonable demands on farmers' finances or create undue disturbance of farming operations, would find favour with the large majority of them.

If and when the time comes for this work to be undertaken here, the matter of the financial outlay involved is bound to raise a difficulty. The tax-paying community would, no doubt, raise objections to a general tax for the purpose, especially under present circumstances, and some farmers would likewise be slow in giving it financial support. But when it is considered that farmers are already losing several millions by animal diseases, it seems logical that it would be to their advantage to contribute a reasonable sum to a scheme which would reduce this loss. Even if the small sum of a shilling per head of the cattle population was contributed by them towards such a project, enough funds would become available to ensure much progress. Such a sum would only involve an outlay on the average of one pound per farmer per year. A small tax on this basis would provide £200 000 a year which, with the present Government expenditure on the control of animal diseases, would ensure enough money to undertake the work on a considerable scale. Such an investment by farmers would, I feel convinced, prove a profitable form of insurance. I have purposely raised this question of a cattle tax as a means of financing a disease-control scheme in the hope that you will frankly criticise it.

By way of conclusion let me summarise by saying that in modern veterinary science we have an implement of considerable potentiality with which to help the prosperity of agriculture; that its numerical strength, judged by the number of students now in College, is, or will be in the near future, of ample proportions to undertake a more active part in this work of national welfare and that the time has now come when livestock owners in their own interests would be well advised to avail themselves of the services of this science to the fullest extent possible.

Weekly Wisdom

Anyone who has once come in contact with one or more men of the first rank must have had his whole mental standard altered for the rest of his life.—Prof. H. R. Robinson, F.R.S., "Rutherford: Life and Work to the Year 1919." *Nature*, November 21st, 1922, p. 593.

* * * * *

When the floor of a barn at St. Neots, Cornwall, collapsed under the weight of 18 tons of potatoes, ten bullocks underneath were buried. The farmer and his neighbours worked six hours to rescue the animals, two of which had been killed.

CLINICAL COMMUNICATIONS

Winter Trichostrongylosis in the North

JOHN F. WATSON, M.R.C.V.S.
Milnathort, Kinross-shire

Introductory Paragraph and History.—By a coincidence it was my lot to be investigating a serious outbreak of a fatal diarrhoea in Suffolk cross lambs (hoggs) when Messrs. Lyle Stewart and H. Draper Crofton published their article on "black-rush": I must confess that their effort, which was most interesting reading, spurred me on to reach a conclusive issue in my own problem.

It was: a flock of 100 Suffolk Cross lambs (hoggs) which were introduced to this particular farm early in October. They were introduced on to dirty ground which has rather a bad parasitic reputation. The latter appears aggravated now by lack of available grass owing to the ploughing up scheme: as a result, overcrowding is more apt to occur than in pre-war days. The ground in question was carrying 500 other sheep when the hoggs were introduced, making a total of 600, on land which was really capable of carrying only half that number.

The incoming hoggs came off very good pastures under the surveyance of a capable shepherd. Five hundred ewes were under his care, the death rate was only four. This speaks for the successful sheep management of the affected hoggs before sale.

I am indebted to the Department of Pathology and Bacteriology, The Royal (Dick) Veterinary College, Edinburgh, for conducting bacteriological examinations of affetted lambs and carrying out a quantitative examination of stomachs and intestines.

About a score of lambs had started to scour, and after a few days showed signs of extreme weakness. Death supervened in 18 cases.

Examination.—A typical hogg affected was found to be emitting a very offensive blackish-green diarrhoea, which resulted in extensive soiling of the hindquarters. Most of the sick subjects showed a marked paleness of the mucous membranes and a discharge from the eyes. There appeared to be a progressive loss in condition and many other hoggs had a stunted appearance.

Diagnosis.—Serious gastro-enteritis resulting in a formidable type of diarrhoea.

Post-mortem Examination.—Examination of the stomachs and intestines showed the presence of the following nematodes:—

4th Stomach.—*Ostertagia circumcincta*	... ...	400
Trichostrongylus axei	... ...	1,300
Intestines.—*Trichostrongylus* species	... ...	20,000

Treatment.—Since the owner had been dosing with copper sulphate and nicotine and obtaining very poor results, phenothiazine was commenced. An initial dose of 16 grammes was given, followed by 5 grammes a fortnight later. This line of treatment proved very satisfactory because no further deaths occurred, while several cases of extreme weakness steadily improved.

Discussion.—This parasitic gastro-enteritis appeared to be associated with the very heavy infestation in the small intestine because fatal symptoms usually develop when the number of worms exceeds 10,000, and more so if the bodily condition is poor. Contributory factors responsible are probably associated with:—

(*a*) The fact that the growth of the hoggs was checked because of dietetic errors, and the change over to poorer pasture at a critical time of the year.

(*b*) The supplementary feeding of concentrates: these were poor in quantity and quality.

(*c*) Overcrowding on sheep sick pastures. This is a very important factor.

I agree with Messrs. Stewart and Crofton that this parasitic disease is certainly causing a serious wastage in breeding stocks of sheep—probably more than is generally realised—so that routine dosing is essential, especially in cases of a faulty nutrition.

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Interesting Milk Fever Cases

A. O'NEILL, M.R.C.V.S.,
Bray, Co. Wicklow

Case No. I.—*Subject.*—A Kerry cow, calved three months and three days.

History.—In September the animal, with others, was brought in from the field for milking at 7 a.m. apparently in perfect health, but on being released from the bails at about 8.30 a.m. to go back to the field, she staggered when turning and fell head foremost into the channel, lying there unconscious until I arrived at 9.30 a.m.

Examination revealed a weak pulse, very faint quick breathing, dilated pupils non-sensitive to the touch, the cow lying as one in a slaughter-house having received an unsuccessful shot from a killer.

The condition appeared to me somewhat mysterious and many possible causes were quickly considered, including poison, choking, broken neck, embolism, etc., but I failed to find any reasonable cause to fit the case. Accordingly I left the animal untouched and went to examine the rest of the herd in the field, finding them all in perfect health.

Returning to the cowshed, I had plenty of straw put around and under the patient, raising her head to which cold-water swabs were applied at intervals of 15 minutes for about two hours, during which time the owner returned with me to my surgery.

Having carefully thought the case over again, I decided to return with the owner and treat the cow for milk fever.

On our arrival back her condition was, if anything, worse, the body being cold, so having milked her out and taking the usual precautions, I pumped the udder as full as possible, tapped the rumen for severe tympanites, covered the body over with straw, propped her up on the sternum, and left her in the care of her owner (it was then 2 p.m.).

Her improvement, to say the least of it, was amazing; at 4 p.m. she was completely conscious and was up on her feet at 8.30 p.m.; the following day she was perfectly normal with no further treatment, and she never looked back. (This cow was by no means a typical milk fever subject.)

Case No. II.—*Subject.*—Shorthorn cow on third calf.

History.—On December 14th I was called at about 8.45 a.m. to see this animal, the owner stating that she was eight days over her time, was lying down groaning, but showing no signs of calving.

When first seen she was behaving, to my mind, like a cow with milk fever, but on making a vaginal examination I found the fore legs of a live calf enclosed in the unruptured membranes in the passage. I therefore proceeded to deliver the calf, a task attended with much difficulty owing to the position of the head.

I then attempted to give the cow a stimulant drench but found she was unable to swallow, being in a state of coma, so I returned for my milk fever outfit, and on my arrival back found she had everted the uterus. This I succeeded in putting back quickly as there was little or no resistance, but had to return the foetal membranes also and put two strong sutures in the lips of the vulva. I then pumped the udder as full as possible, applied the usual tapes, propped her up on the sternum (tying the head forward by the horns) and left her. It was then 1 p.m.

At 5 p.m. she had regained consciousness and at 7 p.m., as there was slight forcing and tympanites, I gave chloral hydrate-carminative mixture in a drench, and saw her again at 10.30 p.m. drinking a bucket of chilled water and being fixed up for the night.

On the following morning she was still down and a portion of the membranes was protruding between the stitches of the vulva. On pulling, the complete membranes came away followed by a heavy flow of urine. She lay all day but was cudding in the evening (December 15th).

Next morning she was up on her feet and perfectly normal: both cow and calf did well.

ROYAL COLLEGE OF VETERINARY SURGEONS

R.C.V.S. ANIMAL MANAGEMENT EXAMINATION

List of Successful Candidates

Dublin:

Brown, S.
Burke, W. L.
Canavan, R. J.
Crooks, D.
Daly, P. J.
Dromey, W.
Finn, J. J.
Higgins, P. K.
Hirsch, E. A. L.
Lunney, W. J.
Lynch, Vincent
McCarthy, James
McCarthy, J. K.
McDermott, M. J.
Maher, K. J.
Maybin, R. T.
Moffit, T. F.
Mullarkey, J. P. P.
Murphy, T. (Palatine)
Murphy, T. (Dublin)
Nolan, Francis
O'Callaghan, F. J.
O'Riordan, John
O'Sullivan, Edward
Quinn, P. G.
Ross, J. K.
Shearman, F. E.
Thornton, Edward
Twomey, Wm.
Wolohan, J. J.

ABSTRACTS

[THE RESULTS OBTAINED WITH TYROTHRICIN IN THE TREATMENT OF 157 COWS WITH STREPTOCOCCIC MASTITIS. Bryan, C. S., Weldy, M. L., and Greenberg, J. (1942.) *Vet. Med.* **37**. 364-369.]

Investigation showed that 150 mg. of tyrothricin dissolved in 25 c.c. of water was the optimum dose for one quarter. The solution was prepared by dissolving 600 mg. of tyrothricin powder in 5 c.c. of 95 per cent. alcohol and then shaking with 100 c.c. sterile tap water. This watery solution was found to be less irritant than a mineral oil solution. [Other workers have reached the opposite conclusion.] The infusion was left in for at least six hours; this reduced the milk yield of most of the cows by 1 to 50 per cent. and abnormal milk was usually produced for two to five days following treatment.

All the quarters of 157 infected cows selected as suitable for treatment, were each infused with 25 c.c. tyrothricin solution. One hundred and five cows were cured with one treatment, 25 with two, eight with three and one with four treatments, *i.e.*, 90 per cent. of the total. The success of treatment did not necessarily depend on the length of time a cow had been infected but if induration was at all extensive treatment usually failed. J. F.

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[STUDIES ON MINERAL METABOLISM IN SHEEP. (1) THE NECESSITY TO SUPPLEMENT CEREAL GRAINS WITH CALCIUM IN SHEEP RATIONS. Franklin, M. C. (1942.) *J. Council Sci. and Indust. Res., Australia.* **15**. 85.]

In many parts of Australia feed shortages become so severe under drought conditions that it is the custom to feed cereals to stock. Such rations, it was found, adversely affected the health and general development, not only of growing stock, but of adult animals. Experiments carried out on sheep showed that retardation of development was due either to a calcium deficiency *per se* or to an upset of the CaO/P_2O_5 ratio of the ration. Adverse effects noted on weaners fed on a grain ration unsupplemented with calcium carbonate included retarded growth, the development of hypocalcaemia, hyperphosphataemia and hypermagnesaemia, grossly abnormal dental development and heavy mortality. Weaners reared on such rations for the first nine months of life showed considerable improvement when a supplement of calcium carbonate was added to the ration thereafter, but still failed to develop normally; the provision, however, of 1 per cent. of calcium carbonate to the basal grain ration from the commencement *entirely* prevented any abnormalities. J. S.

AMERICA'S LEAD IN AGRICULTURAL RESEARCH

Professor J. A. Scott Watson, Agricultural Attaché to the British Embassy in Washington, who is now in this country, referred in a recent statement to American agricultural achievements. He said that the increase in food production in the United States in 1942, compared with the good performance of 1941, was enough to feed 20,000,000 extra people. That had been done without the compulsory measures that operated in this country.

The goals for 1943 had been set higher still. More meat, eggs, dairy products, etc., was aimed at, and new kinds of crops were to be grown. There was much anxiety about labour; too much of it had been withdrawn from the farms.

Referring to his visits to American agricultural colleges and experimental establishments, Professor Scott Watson said that America was unquestionably leading the world in agricultural research. Those engaged in it had great achievements to their credit in regard to soil conservation, plant breeding, and animal nutrition. At one time we looked to Germany as the leader of scientific thought and research, but in future we must look across the Atlantic. We should send most of our research workers there for advanced training. We had, of course, done so in the past, but those contacts greatly needed to be developed if we were to bring the full power of science to bear on our farm problems.

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CLEAN MILK

So long as milk is coming on the market which is not up to a reasonable standard for human consumption there will be some sort of a medical case for pasteurisation and the milk trade will exploit that case. Producers, therefore, can avoid general pasteurisation only by making the process unnecessary. We believe compulsory pasteurisation to be a thoroughly retrograde step. It is at best an expedient. It conceals problems and does not resolve them. We trust, therefore, that farmers will insist on clean milk from clean herds being the cornerstone of any policy they may put forward about the future of the dairy industry.—*Farmers' Weekly.*

The Late Colonel Robert John Stordy, C.B.E., D.S.O., M.R.C.V.S.

Personal Tributes

We have received the following tributes to the late Colonel Stordy, whose death we recorded with the deepest regret in our last issue.

Professor William Kearney, M.R.C.V.S., of the Veterinary College of Ireland, writes:—

As one who had the privilege of working in the Veterinary Department of Kenya Colony for a number of years whilst Colonel Stordy occupied the position of Chief Veterinary Officer, and as one of the few of his colleagues of those days who are now at home, I feel it incumbent on me to pay this quite inadequate tribute to his unique personality and his outstanding contribution to the advancement of veterinary science in the Colonies.

The prominent position which our profession now occupies throughout the Colonial Empire is in no small degree due to the relentless efforts of Stordy, in the early years of this century, to obtain recognition by Government of the paramount importance of veterinary science to the welfare of the community. Only those of us who were in close contact with him then fully realise the extent of his influence on the trend of affairs which succeeded in extricating veterinary matters from the control of other professions and in establishing a free and independent Veterinary Department not only in Kenya but throughout the principal British Colonies. Aided by the late Eustace Montgomery, who was his principal collaborator and confidant in this endeavour to procure independence for the profession, Stordy adopted the wise policy of proving the value of the profession, in the first instance by applying the most modern methods of science through a team of keen and up-to-date young graduates with whom he was singularly well endowed early in his expansion programme in East Africa. Then, and only then, did he make his claim for freedom of action in all matters pertaining to the welfare of livestock. Although full emancipation was not achieved before he retired, the spirit of progress which he had inculcated into those who succeeded him continued until the objective that he and Montgomery originally set was reached some years later. After this original struggle for freedom of the profession in Kenya, or British East Africa as it was then called, other African Colonies followed suit, principally through the influence of a number of Stordy's original staff who were appointed to them as Chief Veterinary Officers after the last war, until eventually the Colonial Office agreed to the establishment of independent Veterinary Departments in practically all the Colonies. It is right and proper, I believe, that an early record of Colonel Stordy's outstanding share in this, perhaps the greatest development in British veterinary affairs in recent times, at home or abroad, should be placed before the profession. No doubt when the history of our science in tropical Africa comes to be written a more detailed account of his pioneering efforts in this regard will be recorded.

There are others better qualified than I to depict Stordy's personality, but it may be of interest to his friends and admirers in the profession at home if I give a brief picture of him as I remember him in East Africa before and during the last war, when he was in the hey-day of his zest. In office he was a brusque and somewhat austere personality, except to his intimate friends, with an unusual aptitude for making quick decisions and putting them into effect without hesitation. This was not a sign of nervous irritability or "liver" (as some considered), but a symbol of a never-flagging energy with which he was blessed by nature. Were it not that he was possessed of such energy his great contribution to our progress in Africa would not have been so effective. Perhaps the best instance of his virile nature was the rapidity and efficiency with which he converted the whole of his civil department into a military corps, the East African Veterinary Corps, within a few days of the outbreak of war in 1914, and the manner in which he detailed his staff for military duties up and down the country. The complex and vast nature of the work which then became his responsibility without notice would have unsettled most military strategists, but not Colonel Stordy, who set about his plans of campaign with enjoyment and masterly resourcefulness.

Although circumstances placed him in a civilian career he would, I believe, have filled the role of military commander even more successfully than that of a civil administrator. Like most Scots he was imbued with a fighting spirit. Out of office his charm of manner won for him a prominent position in the society of Nairobi and throughout the Colony. A generous host and a convivial guest, he was sought after and greatly admired in social life there.

Perhaps no finer tribute to his zealous career in Africa has been written publicly than that by Lord Cranworth in his recent book "Kenya Chronicles," which, for those interested in the history of the Colony and Colonel Stordy's share in its development is well worth consulting. Here are a few brief passages from the book: "Robert Stordy was the head of the Veterinary Department and he and his wife were very frequent visitors to our house and we to theirs. His office was one of the most important in the Colony, equally to the settler and the native, and certainly it was a full time one and he never spared himself. . . ." "The services that he rendered to the Colony over the period of nearly 20 years were never in my opinion sufficiently appreciated."

The demise of such a distinguished member of the profession is surely a mournful experience for us all.

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Mr. John Smith, O.B.E., M.R.C.V.S., Veterinary Adviser to the Secretary of State for the Colonies, writes:—

The passing of Robert Stordy takes away one who intimately connected us with the early work of veterinarians in the Colonies. All that he has done during his life demonstrates that he was a pioneer by instinct. Only for limited periods has he engaged in what may be described as routine work and it is, perhaps, a little doubtful whether, on such occasions, he was at his happiest. His restless energy, undoubted foresight and urge caused him continuously to look for new problems which had to be solved. This outlook made him particularly valuable in the early days of British East Africa, as Kenya was then known. His organisation of transport made possible development in the more remote areas. At the same time, it enabled him to estimate the menace to that transport and to the subsequent improvement of the whole of the territories involved, of diseases of stock. The plans he made for their control were upon a scale only possible to the man of vision.

Then came the war of 1914-1918. Again Stordy found himself in his element. Transport was still almost entirely confined, in East Africa, to that drawn by animals. One department took charge of obtaining the animals and issuing them; of treating them when sick; of getting them into working condition after treatment, and making good losses from casualties. As head of that department, Stordy proved his worth. He then came home to help further in the war effort.

The invitation to Peru very naturally appealed to him, for a fresh field of work was to be opened up. His subsequent work in Abyssinia and, later, in the present war, proved again his pioneer character.

That such a one could go without criticism is impossible. Stordy was criticised. His vision was not appreciated by all; his restlessness at, even resentment of, delays in executing the schemes he advocated, caused friction. His continued absence from Kenya after the last war was very bitterly resented. Many believe that he would have been of great value during the period of development, in that colony, in the post-war years.

Who shall judge him? He who is never criticised seldom does anything outstanding. The pioneer is not often happy in more settled conditions. All his life, Stordy did that which he believed would be of the greatest value; with his undoubted talents he performed work of the utmost importance to those who followed and are yet to come. His aim was not self or reward. He did what he considered right and gave his best to his work. He has not lived in vain. *Vale!*

DEER FOREST AS DEMONSTRATION CENTRE

Lieutenant-Colonel A. E. D. Anderson, of Glen Etive, Argyll, has given 12,000 acres of land, comprising practically the entire Glen Etive deer forest, on the understanding that it shall become a centre of demonstration for Highland farmers. He hopes that the lands will be utilised for applying and demonstrating methods of management and improvement of hill and mountain pastures, and of building up breeding stocks of hardy sheep and cattle suitable for Highland conditions.

Mr. Thomas Johnston, Secretary of State for Scotland, has thanked Colonel Anderson for his generous gift. The Department of Agriculture for Scotland is arranging this year for the gradual stocking and management of the land, of which some 9,000 acres lie below 1,500 ft.

* * * * *

Germany has little time to spare to deal with the severe outbreak of foot-and mouth disease in her territory. It is consequently spreading through the occupied countries, acording to the head veterinary surgeon of Holmstad, Sweden. The disease has reached Norway and is being carried into Sweden by the German leave trains. Each train carries a pig or so aboard to eat the food left by the soldiers, and these animals are the carriers.—*Daily Telegraph.*

NOTES AND NEWS

The Editor will be glad to receive items of professional interest for inclusion in these columns.

Diary of Events

Jan. 29th.—Annual General Meeting of the Royal Counties' Division, N.V.M.A., at the Royal Oxford Hotel, Oxford, 2.15 p.m.

Feb. 4th.—Meeting of the Central Veterinary Society (Division, N.V.M.A.) at the Conway Hall, Red Lion Square, W.C.1, 2.30 p.m.

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Death of Professor J. F. Craig, M.A., F.R.C.V.S.

As we go to Press (Wednesday) with this issue we learn with the deepest regret that Professor James Ferguson Craig died this morning. Professor Craig was the holder of the William Prescott Chair of the Care of Animals—Causation and Prevention of Disease—in the University of Liverpool, being appointed thereto in 1935 in succession to the late Professor Gaiger. He was formerly Principal of the Veterinary College of Ireland, succeeding to the post on the death of Professor Mettam in 1919.

Professor Craig, of whom we shall publish a memoir in an early issue, was President of the Royal College, 1930-31, and of the N.V.M.A., 1934-35. He was a Member of the Royal Irish Academy and a Member of the Council of the Royal Zoological Society of Ireland. In 1931 the late Sir John MacFadyean, on behalf of the Council of the Royal College, presented him with the John Henry Steel Memorial Medal, in recognition of his great work for the advancement of the veterinary profession.

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PERSONAL

Birth.—Beckett.—On January 14th, 1943, at Chester Nursing Home, to Betty (*née* Strong), wife of Captain W. E. Beckett, Hampshire Regiment, a son.

. . . . .

Marriage.—Macaulay—Milligan.—At the Cathedral, Nairobi, Kenya, on December 28th, 1942, John William Macaulay, B.Sc., M.R.C.V.S., D.V.S.M., elder son of Mr. and Mrs. James Macaulay, 11, Polworth Gardens, Glasgow, to Sara Eileen, only daughter of Mr. A. J. Milligan, M.R.C.V.S., and the late Mrs. Milligan, Ednam Street, Annan, Dumfriesshire.

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IMMOBILISATION OF MOTOR CARS

As there appears to be some variation in the interpretation put by the Police on the provisions of the Motor Vehicles (Control) Order, 1940, we publish below the full text, so that any members of the profession who may be adversely affected can refer to the actual wording of the Order if necessary.

The Motor Vehicles (Control) Order, 1940, dated June 26, 1940, made by the Minister of Home Security under Regulation 19A of the Defence (General) Regulations, 1939.

In pursuance of the power conferred upon me by paragraph (1) of Regulation 19A of the Defence (General) Regulations, 1939, I hereby order as follows:—

1.—(1) Subject as hereinafter provided, a mechanically propelled road vehicle shall not be unattended during the hours of daylight unless—

(*a*) (i) the ignition key has been taken away, and
(ii) the wind-screen, roof, windows and doors of the vehicle are so secured that access cannot be obtained to the driver's seat without unlocking a door of which the key has been taken away; or

(*b*) a part of the mechanism of the vehicle has been taken away so as to render the vehicle incapable of being driven until the part so taken away is replaced; or

(*c*) an adequate and substantial locking device has been applied to the mechanism, the steering-wheel or a road wheel of the vehicle so as to render the vehicle incapable of being driven without removing the locking device, and the locking device has been locked and the key taken away; or

(*d*) in the case of a vehicle in enclosed premises, all entrances to the premises through which the vehicle could be removed are closed by doors or other barriers sufficient to prevent the removal of the vehicle and the doors or other barriers have been locked and the keys taken away:

Provided that in the case of a vehicle engaged in the collection or delivery of goods, letters or parcels and left unattended for a period not exceeding five minutes, it shall not be necessary to comply with the provisions of this paragraph save to the extent that, where the construction of the vehicle so permits, either of the requirements of sub-paragraph (*a*) of this paragraph shall be complied with.

(2) Subject as hereinafter provided, a mechanically propelled road vehicle shall not be unattended during the hours of darkness unless sub-paragraph (*b*) or (*c*) or (*d*) of paragraph (1) of this Article and, to such extent as the construction of the vehicle permits, sub-paragraph (*a*) of the said paragraph is complied with:

Provided that this provision shall not apply to a vehicle whilst being used by a duly qualified medical practitioner, a registered veterinary surgeon or a district nurse for the purpose of his or her profession if sub-paragraph (*a*) of paragraph (1) of this Article is complied with.

(3) This Article shall not apply to—

(*a*) a vehicle whilst being used for the purposes of His Majesty's forces or as a police, fire service or civil defence vehicle, or as an ambulance; or

(*b*) a public service vehicle in enclosed premises which are occupied by the owner of the vehicle and have one or more entrances not so secured as to prevent the removal of any mechanically propelled vehicle therein if there are present and on duty at least two men for every entrance not so secured.

2. It shall be the duty of the owner of a vehicle or, if another person is authorised by or on behalf of the owner of the vehicle for the time being to drive the vehicle, of that person to secure that the provisions of this Order are complied with:

Provided that while the vehicle is in enclosed premises under the care or in the custody of the occupier thereof (whether for reward or not), it shall be the duty of the occupier of the premises to secure that the said provisions are complied with.

3. A constable in uniform or a member of His Majesty's forces acting in the course of his duty as such may inspect or examine any mechanically propelled road vehicle which is unattended and, if the provisions of this Order have not been complied with, he may take any reasonable steps to render it incapable of being driven.

4.—(1) In this Order the following expressions have the meanings hereby respectively assigned to them, that is to say:—

"hours of darkness" has the same meaning as in the Road Transport Lighting Act, 1927(**a**);

"hours of daylight" means any time not being within the hours of darkness;

"mechanically propelled road vehicle" does not include a tramcar or trolley vehicle;

"public service vehicle" has the same meaning as in section 121 of the Road Traffic Act, 1930(**b**);

"tramcar" has the same meaning as in section 121 of the Road Traffic Act, 1930; and

"trolley vehicle" has the same meaning as in section 121 of the Road Traffic Act, 1930.

(2) For the purposes of this Order, a mechanically propelled road vehicle shall be deemed to be unattended unless a person, not being a person under the age of fourteen years, is in attendance on the vehicle either in the vehicle or in the immediate vicinity and sight of the vehicle, and is not in attendance on any other mechanically propelled road vehicle.

5. This Order may be cited as the Motor Vehicles (Control) Order, 1940.

John Anderson,
Minister of Home Security.

Whitehall.
26th June, 1940.

(**a**) 17 & 18 Geo. 5. c. 37. (**b**) 20 & 21 Geo. 5. c. 43.

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INSURANCE OF LIVESTOCK

R.C.V.S. Committee of Inquiry

At the quarterly meeting of Council, R.C.V.S., recently held in York, a report of which will appear in our next *Supplement*, the Council passed a resolution in the following terms:—

"The time is ripe for serious consideration to be given to the question of establishing a general system of insurance of the domestic animals. That to this end a committee be appointed with power to co-opt other persons, whether members of the profession or not, who can render signal service to the inquiry, and to take evidence; that the terms of reference to such committee shall be to investigate, and report upon, the desirability of establishing a general system of insurance of domestic animals with special reference to its bearing on:—

"The provision of adequate compensation for losses.

"The making of provisions for the immediate replacement of producing stock that has been damaged or destroyed.

"The application of science to the production, care, management, and treatment of animals.

"The utilisation of animals, their products and by-products during life and after death, with the object of securing from them the greatest benefit to the community.

"The raising of the standard of animal life, the animal industry, and the industries associated with it."

Compensation Question

In moving the resolution, Emeritus Professor Share Jones said there was no other great industry in which the individual had to carry risks, which he described as of the gravest kind. The element of risk was the greatest menace to which the animal

industry was subjected, accounting as it did for almost all the troubles it experienced.

The question of compensation was a sore one, particularly to meat traders, from whom animals might be seized in the public interest, and to whom no compensation was paid. The idea of a national pool for stock replacement was entirely new, for it proposed the establishment of State centres from which any stock owner who in extraordinary circumstances found his producing machine damaged or destroyed could have it immediately replenished. A general system of insurance would be the means of bringing the whole of our animal population within the purview of science.

The motion was seconded by Professor Craig.

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LOSSES ON SHEEP FARMS

Scope for Veterinary Science

In the issue of the paper of Monday last, the Agricultural Correspondent of *The Times* writes as follows, under the above headings:—

In evidence before the Hill Sheep Farming Committee, the spokesmen of the National Veterinary Medical Association have estimated that loss through disease costs sheep farmers £1,000,000 a year, and that 85 per cent. of this loss is due to diseases that can be controlled. In their view the veterinary services available are all too little used, and they suggest a panel scheme on similar lines to the scheme recently introduced for the control of certain diseases of dairy stock.

It is true that many flockmasters and shepherds in the lowlands as well as the hill districts are fatalists about their losses, even when 5 or even 10 per cent. of the breeding flock die year after year. They have not considered the possibilities of regular veterinary supervision in maintaining the health of their flocks and preventing diseases. Indeed, even in some districts where sheep are an important part of farming, the veterinary surgeons do not profess to be experts in sheep husbandry.

One of the suggestions made by the N.V.M.A. is that a research centre should be established under the Agricultural Research Council in a hill sheep farming area to study the complete structure of hill sheep economy from soil to mutton and wool. There would need to be a hill pasture expert, a nutritional physiologist, and a veterinary pathologist under the general control of a station director who would be familiar with all aspects of the problem. The site might be the English-Scottish border, possibly in the counties of Berwick, Roxburgh, or Northumberland, with subsidiary centres in Denbigh or Merioneth and the North or East Riding of Yorkshire. By the application of well tried scientific methods and improved husbandry, the output of the hill sheep industry might be expanded by 12 to 15 per cent., and if research were concentrated on the hill sheep farmer's problems the scope for improvement is greater still.

Inferior Hill Grazings

One of the troubles in recent times has been the deterioration of the hill grazings, due to the absence of cattle. The ruins of cattle yards and sheds on hill farms show that years ago many more cattle were kept on farms which are now exclusively sheep holdings. The Government subsidy of £3 a head on cattle kept on hill grazings may bring more cattle back to the hills. They are wanted there to check the bracken and keep the grazings sweet for sheep. On some of the better hill farms hardy dairy heifers, free from tuberculosis and the diseases of our over-civilised milking herds, could be raised to supply the dairying districts.

Undoubtedly there is scope for the wider application of veterinary science to the farmer's livestock problems. But there is a tendency to assume that if the farmer joins a panel scheme and pays so much on every cow or sheep, diseases will be charmed away from his holding. In fact there are not nearly enough veterinary practitioners to cover the field effectively, and some of those in practice are not altogether up to date in their methods. It is perhaps all to the good that the introduction of the panel scheme for controlling mastitis, Johne's disease, and sterility in dairy herds has not immediately met with an overwhelming response. There are districts where all the competent veterinary practitioners are already overworked and cannot take on new clients.

Certainly there is room in the profession on both the research and practical sides for more young men and women of ability who will devote their talents to veterinary science and so contribute to the future prosperity of livestock farming.

ROYAL ARMY VETERINARY CORPS

The following announcement is made in the issue of *The London Gazette* dated January 5th, 1943: Rognvald Home Robertson (254387) to be Lt., July 21st, 1942.

Issue January 12th: the following to be Lts.: Robert McCrea (252799), November 24th, 1942; Jack Alexander O'Neil (254226), November 30th, 1942; Robert Sharp Dugdill (254240), December 1st, 1942; David Burgess (254439), December 4th, 1942.

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MILK AND THE INCREASED INCIDENCE OF NON-PULMONARY TUBERCULOUS INFECTION

The relationship of milk to the increase of tuberculosis in Norfolk in war-time was discussed at a recent meeting of the Public Health Committee of Norfolk County Council, when a sub-committee reported that the number of newly notified non-pulmonary cases in the county was: in 1938, 113; in 1939, 123; and in 1940, 119; but it increased in 1941 to 194. The majority of these were gland infections due to the consumption of milk containing bacilli.

Six months ago, the report went on, the County Sanitary Inspector was asked to arrange for as many bulk milk samples as possible to be taken for biological examination. Samples from designated producers were concentrated upon and it was found that approximately 7 per cent. contained living tubercle bacilli. The County Sanitary Inspector had visited all the principal milk collecting and distributing centres in the county and arrangements had been made to take check samples at intervals to trace any tuberculous milk.

The sub-committee considered there should be more control of non-designated milk producers, and had authorised the County Medical Officer to proceed with the biological sampling of non-designated milk up to the limit of expenditure (£300) included in the current estimates. It also requested district councils to authorise their officers to co-operate with the County Council in the submission of biological samples, particularly from school milk producers, and to ask the Divisional Veterinary Inspector to pay particular attention to the tracing of cows which gave tuberculous milk and could be slaughtered under the Tuberculosis Order.

The report further stated that attention had been drawn to the need for improving the arrangements for cleansing and transporting of churns and for the collection of milk, as all over the county considerable quantities of milk had been wasted owing to its becoming sour.

In reply to a number of points raised at the meeting, the County Medical Officer (Dr. T. Ruddock-West) said that everything possible to ensure a pure milk supply in the county was being done, but it was restricted by shortage of staff. Another report was being prepared for consideration by the sub-committee in which he would recommend wider action in regard to the taking of samples than in the past. At present they could do no more than test samples of milk taken from the various collecting depots.

Mrs. C. Clifton Brown urged that the milk that did not go to collecting stations should also be examined.

Dr. Ruddock-West: With our existing staff it is very difficult to do more than we are doing.

Commenting on the above *The Norfolk News* observes, "Naturally no details are disclosed in the public report, but it has to be remembered that a good deal of milk sold for human consumption in Norfolk does not go through the collecting centres which are generally also pasteurising agencies before they become distributors. So that it seems not unlikely that the percentage of tubercle infected milk sold direct to the public unpasteurised is at least as high, if not higher, than the sample disclosed. The Health Committee has taken immediate action, of course. It has told the Ministry of Food what has been found, and we sincerely hope that the Ministry will act energetically as far as it can—which is a good deal now that it so largely controls the trade. The Committee has also authorised its M.O.H. to do what he can with a very limited staff to track down infected cows in Norfolk herds and to seek the active co-operation of the Ministry of Agriculture's veterinary service to try to eliminate them. But to us it is very obvious that even stronger action than that is necessary if we are to prevent a still more rapid deterioration in the position. It is, we are afraid, clear that under war conditions we have lost a great deal of the ground that had been gained before the war through the various measures that encouraged dairy farmers to maintain standards of scrupulous cleanliness—if no more than that—in the handling of milk."

MINISTRY OF AGRICULTURE NEWS SERVICE

Recorded Herds Save Food.—The new milk recording arrangements, which began on January 1st, not only continue the existing schemes run by the County Milk Recording Societies, but also provide under the Junior scheme a simple method whereby farmers can obtain most of the advantages of milk recording with a minimum of form filling. Both schemes are voluntary and the farmer who enrols under the Junior scheme need weigh only once a month.

Once-monthly recording means little work as it supplies information that will be of the greatest assistance in raising the average milk yield of herds and in the economical and efficient feeding of the cows. In these days, when food is in limited supply and some of it has to be brought across the sea at great risk, it is imperative to use that food to best advantage. Milk records provide the basis for relating the ration to the yield.

700 *Tons of Silage from one Farm this Year.*—"Silage forms the perfect food for winter milk production. Only those who feed silage regularly realise its health-giving properties and how well the cows come through the most trying winter when given a generous allowance. This is the opinion of Mr. J. Cooper, of Home Farm, Follifoot, Harrogate, and he has made silage for 20 years. For the same length of time he has fed his cows according to their yields and asks: "How else can any man feed economically?"

The first silo on the farm was a corner of the barn—that corner is still in use. Oats and tares form the main silage crop, but grass silage is also made. A silage mixture is sometimes used as a nurse crop for seeds, or a nurse for a catch crop of rye grass and trefoil.

Mr. Cooper contends that silage making evens out the labour on the farm. A start is made in May with young grass and continued until there appears every prospect of good hay weather in June. If that promise is not fulfilled the grass that has been cut is made into silage. Oat and tare silage comes on in July and is followed by aftermath silage from August to October.

This year 700 toss of silage has been made, of which 250 is of high protein quality and will be fed at about 20 lb. per gallon of milk. Sufficient kale is grown for feeding with oat straw until December. From that month silage is the main feed—60 lb. with a small quantity of hay providing maintenance and first gallon and a half of milk.

CORRESPONDENCE

Letters to the Editor should reach the Office not later than by the first post on Monday morning for insertion in following Saturday's issue.

The views expressed in letters addressed to the Editor represent the personal view of the writer only and must not be taken as expressing the opinion or having received the approval of the N.V.M.A.

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THE NEW VETERINARY BILL

Sir,—Many months ago Mr. John Holroyd, speaking as President of the R.C.V.S., strongly deprecated any premature comment, or criticism based on guesswork or rumour, as to the contents of the Bill still being drafted by the Council. Mr. Holroyd also promised that the full text of the Bill would be available to the profession, and ample time allowed for its examination before its presentation to Parliament. Although Dame Rumour was not silenced, she was soothed and displayed a decent reticence in view of these official warnings and assurances, but as time went on became at times impatient and vocal again. Two appeals by the Sussex Division to the Council for information in May last received replies reported as being "unsatisfactory or uninformative," but on the whole the rank and file of the profession, in spite of the ebb and flow of rumour and speculation, continued to respect the appeal of Mr. Holroyd with a patience and reticence almost amounting to apparent indifference. Particular speculation has centred around the highly controversial and persistent rumour that the Bill would provide a modified curriculum for the training of "sub-veterinary workers," and the granting by the R.C.V.S. of a "Licentiate Degree"—presumably symbolised as L.R.C.V.S.—to those successful in the examinations. The Council continued silent, but suddenly, both the silence and the officially prescribed reticence were broken in a speech by Mr. R. C. G. Hancock to the Society of Veterinary Practitioners, and fully reported in your issue of August 29th last. In this speech, Mr. Hancock not only discusses very fully and frankly the project of a subsidiary veterinary course of teaching, and the granting of a "Licentiate Degree," but also declares himself as fully in favour of both.

Speaking as retiring President of the above Society, his speech would seem to leave little doubt as to this project forming a vital part of the above Bill. In passing, it seems necessary to emphasise here, that Mr. Hancock was expressing his own personal views only, and that neither the S.V.P. nor its Council has at any time publicly discussed or voiced any opinions upon the Veterinary Bill. As reported in your issue of October 24th last, Dr. Wooldridge, a member of the R.C.V.S. Council, in his address as President of the N.V.M.A., referred to Mr. Hancock's speech, and seemed personally to endorse the views he expressed on this matter. Finally, our energetic President in his New Year message now urges us all "to study the text of the proposed Bill objectively, and so far as possible without bias."

All members of the profession, anxious only for its welfare and wishful to place loyal and continued trust in their representatives on the Council of the Royal College, will surely desire to follow this advice, and to keep an open mind on the vital matters at issue. But the present position is surely very anomalous and thoroughly unhealthy. With warnings against premature comment or guesswork, with rumour widespread, with the partial lifting of the secret veil by those in considerable authority, and the official text of the Bill still unknown to them, is it any wonder that the mass of the profession is restive and anxious?

We can warmly agree with Dr. Wooldridge that "no one will gainsay the need for full discussion by the profession *at the earliest date*," or, to paraphrase a famous speech, "to give us the details and let us get on with the job of considering them."

Yours faithfully,

Sandy Lane, E. P. Edwards.
Prestatyn,
N. Wales.

January 9th, 1943.

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DANGER OF RE-INTRODUCTION OF RABIES FROM ABROAD

Sir,—A reply received by this League from the Ministry of Agriculture to our representations and the letter in your issue of January 16th from Brigadier C. A. Murray prove that there is no official under-estimate of the danger of the re-introduction of rabies to this country from abroad.

The regulations need, in our opinion, to be reinforced by a direct appeal to the officers and men in the Forces, the Customs officers, the Police and civilians in the Merchant Service with a view to the strict observance of quarantine for dogs *and cats*.

Since my letter appeared in *The Veterinary Record* on December 12th, information has reached me confirming the apprehension that there is a regrettable laxity at British ports used by ships which have been at ports in countries where rabies is prevalent. Practically all these ships carry some dogs and many cats and the supervision of their movements ashore is stated to be perfunctory and indulgent. We are informed that visitors to the ships are not prevented from taking their own dogs aboard, an act which presumably renders these British dogs liable to quarantine. The ships' dogs are, we are reliably informed, sometimes taken into the neighbouring town without interference.

Another aspect is the lack of knowledge of the benefits of quarantine in the minds of men in the Allied and Dominion Services and it is hoped that some steps may be taken in the way of enlightenment.

Experience proves that dogs can be smuggled through and the necessity for creating a healthy attitude of mind in support of our quarantine regulations might profitably be recognised at this moment. If rabies comes in again by wilful evasion, as in 1918-19, we will have on our conscience a heavy reproach unless we do all we can as soon as possible.

Yours faithfully,

Charles R. Johns,
Secretary.

National Canine Defence League,
Victoria Station House,
London, S.W.1.

January 18th, 1943.

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FERTILITY AND INFERTILITY IN THE COW

Sir,—In your report of the above paper, in your issue of January 9th, page 17, you quote the dose of ascorbic acid for the bull as "1—12 grammes." This is obviously a misprint and should read "1—2 grammes."

Yours faithfully,

Vean House, R. H. Smythe.
Camborne.

January 14th, 1942.